

Waterfront Innovations DESIGN CHARRETTE

WATERFRONT INNOVATIONS DESIGN CHARRETTE CHALLENGE

How can an industrial
waterfront accommodate
public access, restored
natural habitat, or mixeduse urban development
along with port activities?

*charrette

pronounced [shuh-ret]
An intense, collaborative
design or planning session
in which a group of
designers drafts a solution
to a defined problem.



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IMPETUS AND BACKGROUND

The Inner Harbor is at the confluence of Milwaukee's three rivers – the Milwaukee. Menomonee and Kinnickinnic – and the heart of the roughly 1,000acre "Harbor District." The Harbor District is currently the subject of a major redevelopment effort, spearheaded by the City of Milwaukee and the non-profit Harbor District, Inc., and bringing together federal, state, local, and private partners. The goal of the redevelopment effort is to achieve a world-class redevelopment that sets the standard for how waterfronts "work" economically, socially, and environmentally – for the next century.



As Milwaukee continues to build its reputation as "the Freshwater Capital" with innovative research, science, technology development, and manufacturing, the Harbor District offers a location to showcase the best new thinking on how cities relate to their waterways. The Harbor District Initiative organized the Waterfront Innovations Design Charrette to begin to illuminate that thinking.

The Charrette would explore the idea of Milwaukee's "working waterfront" as a place with a mix of uses and types of water edges. Could the waterfront be designed in a way that welcomed people while allowing for continued industrial activities? Could parcels provide stormwater treatment, habitat, and commercial function? Could the sheet metal dockwalls be redesigned to accommodate fish and freighters? The Charrette was designed to help answer the fundamental question of how we could get more benefits out of each square foot in the Harbor District.

Working with its partners at the City of Milwaukee, Sixteenth Street Community Health Center, the UW-Milwaukee School of Architecture and Urban Planning and others, the Initiative distributed a request for qualifications and received responses from sixteen teams across North America. The four teams listed below were chosen to participate in the two-day design charrette.

dtah

James Roche – Lead Designer DTAH, Toronto, ON CAN

Robert Freedman – Project Champion Urban Solutions, Inc., Toronto, ON CAN

Brent Raymond – Urban Designer DTAH, Toronto, ON CAN

Megan Torza – Architect

DTAH, Toronto, ON CAN

Mark Schollen - Ecologist

Schollen & Co. Inc., Richmond Hill, ON CAN

Abe Khademi – Civil Engineer TMIG, Vaughan, ON CAN

STUDIO/ GANG /ARCHITECTS

Mark Schendel – Managing Principal Studio Gang, Chicago, IL

Gia Biagi – Senior Director Studio Gang, Chicago, IL

Chris Bennett – Design Team Member Studio Gang, Chicago, IL

Steven Apfelbaum -

Principal Ecologist & Founder

Applied Ecological Services, Brodhead, WI

Gregory Weykamp – President

Edgewater Resources, St Joseph, MI



Jason Wegman – Principal PWL Partnership, Vancouver, BC CAN

Derek Lee – Principal

PWL Partnership, Vancouver, BC CAN

Patrick Lucey – President

Aqua-Tex, Victoria, BC CAN

Mark Adams – Director, Senior Project Biologist Envirowest Consultants, Port Coquitlan, BC CAN



Bill Wenk – Founding Principal Wenk Associates, Denver, CO

Greg Dorolek - Principal

Wenk Associates, Denver, CO

Matthew Clark – Senior Project Manager Baird, Madison, WI

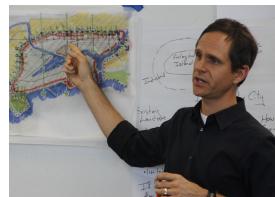
Ed Liegel – Port / Marine Engineer

Baird, Madison, WI

Mike Marek – Principal of Freshwater Ecology Marek Landscaping, Milwaukee, WI







THE CHARRETTE



The Waterfront Innovations Design Charrette took place over October 22 and 23, 2015 at the University of Wisconsin-Milwaukee School of Freshwater Sciences. The event began the morning of October 22 with a welcome and description of the event by Harbor District Inc staff. Each of the four teams then had an opportunity to introduce themselves and presented a brief case study on a project they worked on previously that provided lessons that could be applied to the Harbor District and the goals of the charrette.

After introductions, the four teams occupied their respective corners of room 3080 at the UW-Milwaukee School of Freshwater Sciences and got to work on their ideas for the water's edge in the Harbor District. While the teams worked, stakeholders and guests from the Milwaukee community visited and interacted with the teams to provide ideas and feedback as the teams developed their concepts. Periodically over the two days of work the teamsreconvened as a large group to present the ideas they had developed up to that point

and request feedback from the other teams, Harbor District stakeholders, and guests who were in attendance.

On the afternoon of October 23, the teams made their final presentations to a standing room only crowd of over 100 Harbor District stakeholders and guests. After each presentation there was a question and answer period where guests could provide feedback on the ideas developed by the teams. Following the charrette the teams were each given two weeks to further refine their ideas and drawings to incorporate the discussions that took place during the final presentations.

THEMES

In the final materials presented by the four teams there were a number of common themes as well as several unique ideas. The materials and ideas produced by the four teams also had commonalities with prior design work produced by students at the UW-Milwaukee School of Architecture and Urban Planning.

Five themes emerged and are highligted on the following pages:

- Port And Heavy Industry
- Connecting The Street Grid
- Public Space And Access
- Ecological Restoration
- Water's Edge

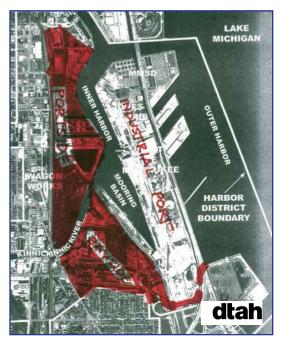


PORT AND HEAVY INDUSTRY

All of the teams proposed greater separation than currently exists between heavy industry and other land uses. Three of the four teams proposed moving heavy industrial and port activities from the western and southern edges of the Harbor District to Jones Island. One team proposed maintaining the Harbor District as an "industrial island" in the middle of the city, but with "greener" elements and additional transportation connections. However, each team also recognized the importance of protecting Jones Island for port and heavy industrial uses to maintain that functionality for the wider regional economy.

Concentrating heavy industrial and port uses on Jones Island would free up land on the western and southern edges of the Harbor District for other uses. While this transition could provide an opportunity to change much of the character of the Harbor District, many of the businesses and properties that are proposed to be moved are privately owned with substantial operations in place. An analysis of the potential value of new development versus the cost of relocating major facilities will be key component of future planning efforts in the Harbor District.

The idea of consolidating port operations on Jones Island encourages us to consider the optimal area necessary for port uses. Evaluating this idea may provide additional insights into future opportunities and possibilities in the Harbor District.





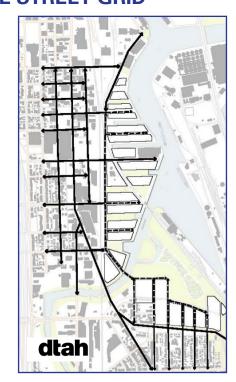
A ship unloading at the Nidera grain docks on the south end of the Harbor District

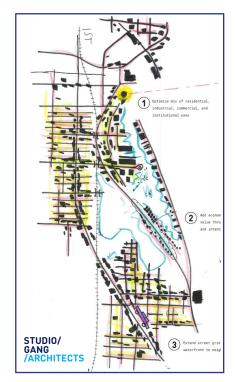


CONNECTING THE STREET GRID

An active rail corridor along the western edge of the Harbor District has long been a barrier between the District and adjoining neighborhoods. Waterways are a key asset of the area, but a lack of bridges contributes to the poor connectivity.

Many of the land use, public space, and water's edge recommendations made by the teams rely on better connections





between the Harbor District and surrounding communities. Modern manufacturing facilities require improved truck access along new streets traversing the railroads and/or waterways in the district. Mixed use urban neighborhoods require improved bicycle and pedestrian networks connecting people from existing neighborhoods into and through the district.

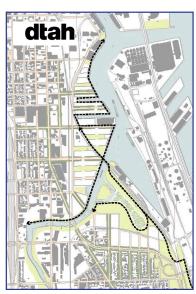
Several common proposals for improving connectivity emerged from the Charrette:

- continuing South Water Street from its route on the north to Greenfield Avenue and the parcels to the south;
- creating additional east-west connections from the neighborhoods to the west across (or under or over) the railroad tracks into the Harbor District; and
- improving the street connections from the Bay View neighborhood to the south into the Grand Trunk area and surrounding parcels.

PUBLIC SPACE AND ACCESS

The Milwaukee County Public Boat Launch on South Water Street at the north end of the Harbor District is the only public access to the waterfront in the entire District. Improved public access was a major theme heard during public outreach efforts leading up to the charrette and an item the charrette teams paid special attention to in their work.

Each team included plans for extending the existing riverwalk system from the Third Ward and Downtown into the Harbor District. The teams also suggested providing strategic access points to the waterfront in the shorter term, as the development of a riverwalk system could take considerable time. Several teams talked about repurposing railroad spurs for public bicycle and pedestrian paths.



This diagram from DTAH shows where they envision public access and bicycle and pedestrian circulation



This diagram from Wenk includes a waterfront harborwalk (red line) and several public green spaces

Connecting the surrounding the communities to the waterfront in the Harbor District would engage more people in the revitalization of this area and build awareness for the water quality and land use challenges present. As public spaces and amenities are considered it will be important to determine what land uses and areas are not compatible with public access and how those conflicting uses are located.

The issue of conflicts between recreational boaters and the large commercial shipping vessels was raised throughout the charrette. To date, there has been little conflict between these two groups in Milwaukee. However, there are concerns that as more public access is available and as more people take advantage of the recreational opportunities available in the Harbor District, conflict and safety issues could emerge. Several teams pointed to this conflict as more reason to consolidate shipping operations on Jones Island and away from potential recreational boating areas.

ECOLOGICAL RESTORATION

All four teams included ideas for restoring the ecology and natural wetland environment of the Harbor District. Each team retained the industrial and port components of the Harbor District, but with natural areas interwoven throughout to address a number of goals including stormwater management, habitat restoration, and public green space.



A Studio Gang concept drawing for how to restore the Harbor District's estuary and provide new development opportunities.

With the City of Milwaukee-owned Grand Trunk site being home to the last few remaining acres of wetland in the



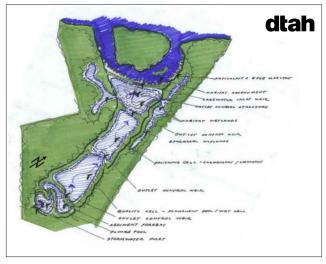
Current water's edge on former Solvay Coke site that several teams proposed to fully renaturalize

area, all of the teams chose to continue efforts to establish a natural wetland on this site. Several proposals included ideas for restoring natural wetland areas in other portions of the Harbor District and even looked at the breakwall to the east of the district for opportunities for ecological restoration.

As the Harbor District looks to advance ecological restoration efforts there are still many questions to be addressed. What habitat and wildlife currently exists in the Harbor District (studies tend to focus on the rivers or the lake, not the estuary)? If new or restored habitat was developed in the Harbor District, would it attract plants, fish, and wildlife? Can natural habitat coexist with industrial and port activities? How can seiche wetlands be developed in a hard-edgedurbanized port?

Several teams responded to the last question by proposing ways to perforate the dockwall to allow water to flow from the main channels into the land behind the dockwall. These methods would allow the dockwall to maintain its structural integrity while providing area for restored wetland. Other ideas included renaturalizing some of the harbor's edge to provide sloped entry to the water and reintroduce shoreline variation that was lost when the waterfront was hardened and straightened.

WATER'S EDGE



DTAH's concept for a stormwater wetland structure on the Grand Trunk site



The last remaining wetland in the Harbor District on the Grand Trunk site. (Photo by Adam Carr)

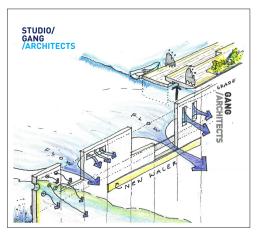
The teams provided a number of strategies for the water's edge to accommodate the variety of ideas and uses presented in their proposals. All four teams suggested breaching the sheet metal dockwall edge to provide natural wetland habitat within the Harbor District. The teams also provided ideas to mix a variety of uses at the water's edge including public access, natural habitat, and commercial/industrial water functions.

The future land use scenarios and goals that will be identified in the Water and Land Use Plan currently under development will dictate what water's edge types to deploy in the Harbor District and where to deploy them. As priorities are identified the ideas generated during the charrette will inform these designs and help determine what proposals are applicable. Further work will have to be done to determine the feasibility of different proposals.



A Wenk team concept that maintains a water's edge that allows for ship docking and public access, but that also allows water to flow through to restored wetlands.

The water's edge proposals included here provide the Harbor District with a variety of options as efforts move forward to revitalize the Harbor District. Given the central role of the waterfront in the district, it is critical that the development of the water's edge serves the priorities identified in the Water and Land Use Plan.

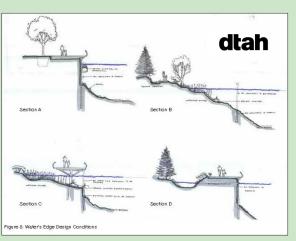


Concept drawings from the Studio Gang team showing how the dockwall could be perforated to allow water to flow across the edge into restored wetlands.



Most of the Harbor District waterfront consists of hardened edges like those seen here at the Milwaukee County Boat Launch. (Photo by Ethan Taxman)





Four water's edge concepts from the DTAH team that could be deployed in different places in the Harbor District according to the accompanying map.

UNIQUE IDEAS

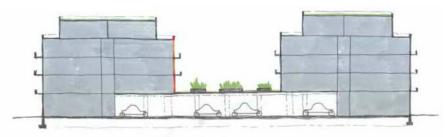
While there were a number of overlapping themes among the various teams' proposals, each team also developed unique ideas that either advance one of the major themes further or present a new concept for the Harbor District.



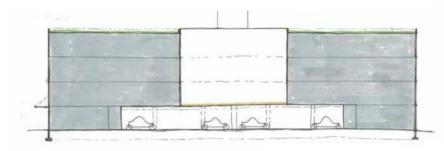
DTAH: FLEXIBLE BUILT FORMS

With the Solvay Coke and Wagon Works sites currently largely devoid of buildings and infrastructure, all the teams in the charrette spent time thinking about how they would activate these sites in the future. DTAH used these two sites to highlight the call for a mixed use and flexible neighborhood by developing a series of building form recommendations that could serve as the platform for residential, mixed-use, commercial, or industrial uses depending on what is recommended in the final Water and Land Use Plan for the Harbor District.

The building forms would hide parking in the interior of the buildings, maintain a relatively low profile to fit in with surrounding neighborhoods, and would be interspersed with linear stormwater parks to provide green space and properly manage water runoff. By developing a basic form for the buildings instead of prescribing a specific use, the area could be developed according to the community's needs and/or changes over time.



Residential development with embedded at-grade parking.



Commercial development with embedded at-grade parking.



Light industrial development with embedded at-grade parking.

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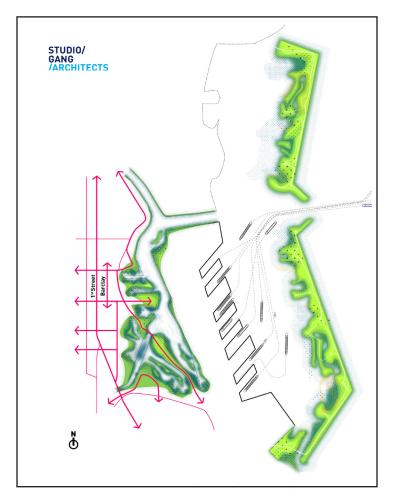


Examples of a development in Toronto using DTAH's flexible built forms concept.

STUDIO GANG: ECOLOGICAL BREAKWATER

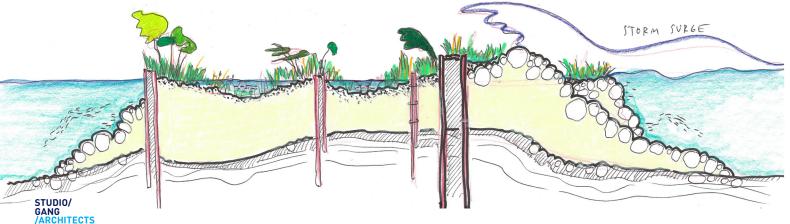
To advance several of their ideas the Studio Gang team looked a bit outside of the Harbor District at Milwaukee's Harbor Breakwall. As the Milwaukee Harbor Breakwall is in need of repairs in the near future, Studio Gang proposed developing an Ecological Breakwater by widening the current breakwater and engineering a natural wetlands area behind the breakwater (towards the Harbor District).

The Ecological Breakwater would absorb more wave action than the current breakwall system, thus offering more protection to the eastern side of Jones Island. More protection would mean more ship berths and slips could be built on the eastern side of Jones Island and would allow for more port and industrial facilities to be located on Jones Island. The new breakwater would also provide additional habitat for fish, wildlife, and birds in the area.





The Cat Island Chain restoration project in Green Bay demonstrates ideas similar to Studio Gang's ecological breakwater. (photo courtesy of Michels Corporation)





WENK: BARGE LANDSCAPES

While many of the ideas developed during the charrette were proposed with a longer-term vision in mind. Wenk included some ideas that could be implemented within a year or two. To create a waterfront destination and aid in furthering interest in the Harbor District the Wenk team proposed creating a series of water's edge landscapes out of industrial barges.







Pool barge in Vienna, Austria

Soccer barge in Portland, Oregon

The barges could create temporary marsh wetlands, public park space, or recreational facilities such as swimming pools or sports courts. Using industrial barges for any of these uses you could create a waterfront destination that could be moved around the Harbor District as needed and would address many of the priorities identified in Harbor District outreach efforts in the very near term.



PWL: EXPERIMENTAL SEICHE WETLAND

While the PWL team focused on preserving the majority of the Harbor District for industrial use, they had specific recommendations for the Wagon Works site that blend academic research, ecological restoration, and public access. PWL proposed turning the Wagon Works site into a "living lab" that would involve the creation of a managed seiche wetland to test out natural plantings and landscape interventions that could be implemented in other areas in the Harbor District or further up the river systems.

The key to the "Living Lab" would be a weir structure at the water's edge that would allow for moderation of the amount and flow of water into the site to create conditions similar to those being tested for in the Harbor District, upstream, or beyond. PWL also proposed creating additional indoor and outdoor research space on the site to build off the success of



the UW-Milwaukee School of Freshwater Sciences across the street from the site. They also proposed including public access to the site and creating some elevated topography in areas to provide vantage points and varying landscapes for visitors to the Harbor District.

There are some crucial questions to be answered before working towards implementing the ideas put forth by the PWL team. Is there a need for additional outdoor research space like what is proposed for the "Living Lab?" What are the costs and engineering restraints to creating a water's edge weir, a new wetland environment, or elevated berms? Further research and answers to these questions could provide very useful to the future development of the Wagon Works site and other sites in the Harbor District.

FINAL REPORTS

Following the completion of the charrette, each team was given two weeks to return to their home offices and make changes, additions, and improvements to what they produced during their two days in Milwaukee. The following pages summarize each team's proposals and concepts. To view the full final reports submitted by each team, please visit harbordistrict. org. The final reports include many of the themes discussed previously with additional detail, narrative, and drawings.

We encourage you to take some time and read through the narratives and examine the drawings to determine what in these reports are important to your future vision for the Harbor District. Should you have questions or thoughts to share you can always contact Harbor District Inc. at **info@harbordistrict.org** or interact with us on Facebook and Instagram.

SUMMARY OF FINAL REPORT: DTAH

The team led by **DTAH** from Toronto started with the idea that carefully considered parameters are vital to guide the future development of this area with a goal to support its gradual integration into the fabric of the city. Those parameters are defined within their set of guiding principles listed here.

IMPROVE/DEFINE LAND USE

- Protect Jones Island as a working industrial area.
- Make the boundaries between industrial and mixed-use areas very clear.
- Relocate heavy industrial uses from the inner harbor, grouping them with similar scale operations on Jones Island.
- Allow light industrial, commercial, and other non-noxious uses to continue in the inner harbor, keeping specific areas as mixed use.

LEAD WITH THE PUBLIC REALM

- Establish safe access to the waterfront at strategic points in regular intervals along the water's edge.
- Extend the network of new roads and pedestrian access from the existing Walker's Point, Mitchell Street, and Bay View communities into the Harbor District.
- Create a waterfront promenade that would connect the Downtown and Third Ward Riverwalks with the Kinnickinnic River and Bay View neighborhood. See page 5.

ESTABLISH STREETS AND BLOCKS PLAN

• Establish a flexible road network that extends the existing road grid east and north from neighborhoods into the Harbor District. See page 4.

ESTABLISH DISTRICT ENERGY SYSTEM

- The development densities proposed in the Harbor District present an opportunity to utilize a district energy strategy that optimizes efficiencies and minimizes greenhouse gas emissions.
- The existing sewerage treatment plant provides a source of methane gas that could be used to fuel the district energy system.

IMPROVE HABITAT OPPORTUNITIES

• A large wetland on the Grand Trunk site designed to manage stormwater runoff, would also create new wildlife habitat. See page 6.

EXPAND MOVEMENT SYSTEMS

- Expand the riverwalk south into the Harbor District
- Extend the bicycle network from South 2nd Street east, and from the KK River Trail South along the river.
- Consider all new streets in the Harbor District as complete streets - accommodating all modes of transportation with an emphasis on walkability.
- Consider coupling additional multi-use trails with existing railway infrastructure.

INTEGRATE STORMWATER MANAGEMENT OPPORTUNITIES

- The proposed stormwater management strategy includes green streets, green buildings, and linear parks that will manage stormwater within the public realm and treat runoff from adjacent blocks as close to the source as possible.
- Linear parks are oriented parallel to development blocks and configured to attenuate stormwater runoff prior to discharging into the harbor.

ESTABLISH A FLEXIBLE BUILT FORM

• DTAH's vision for the Harbor District is based on the creation of a truly mixed neighborhood that would transform the area from a low density precinct into a more urban, tight walkable neighborhood. See page 8 for more information and drawings.



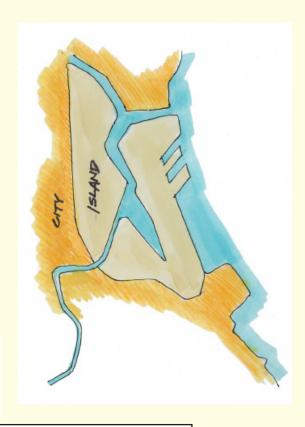


The DTAH team's final master plan illustrating all guiding principles

SUMMARY OF FINAL REPORT: PWL PARTNERSHIP

A team led by **PWL Partnership** from Vancouver based their work around the idea of preserving the harbor as a functioning industrial land use area. PWL saw the harbor as an island within the City, as a unique landmass separated from and surrounded by a very different landmass. As a functioning industrial shipping port it is unlike anything nearby.

Working with their understanding that the harbor is important to preserve as an active industrial area and shipping port, PWL examined the parallels of protecting it like one would approach protecting an ecologically significant island.





- 1 Industrial Island
- 2 The Shoreline: Commercial/ Industrial Buffer
- 3 Residential
- 4 Park and Open Space
- 5 East-West Neighbourhood Connections
- 6 Pedestrian/Cycling Route







EXPERIMENTAL LANDSCAPE

PWL's concept proposes to take the Wagon Works (coal pile) site out of its current use as bulk storage in order to use it as an incubator site to:

- foster a strong community connection with the harbor and the School of Freshwater Sciences,
- offer new small scale business opportunities related to freshwater sciences and technologies or that offer a unique community value, and
- build a reconnection to the natural systems and beauty the harbor once had.

The concept takes a large portion of the site and turns it into an experimental landscape to test the viability of plants and technologies that offer promise to improve water quality and habitat, and reduce sediment loads from upstream. Plants could be tested within the site under different conditions using the adjustable control weirs to reproduce a variety of riparian wetland conditions.

The plants tested in the experimental landscape could be used upstream on the Kinnickinnic River (or the Menomonee, Milwaukee, and beyond) to aid in river revitalization efforts that have a significant impact on the health of the Harbor District. See page 10 for an additional drawing and more information on the experimental seiche wetland.

SUMMARY OF FINAL REPORT: STUDIO GANG ARCHITECTS

A team led by **Studio Gang Architects** from Chicago links the city's economic future to its natural past with a central focus on re-establishing natural ecosystems. Their concept is based on the premise that edge conditions define the relationship between land and water in the Harbor District and can lead the way to a new civic ecology. Their recommendations are organized into four major principles, described here.



ESTABLISH THE OUTER EDGE

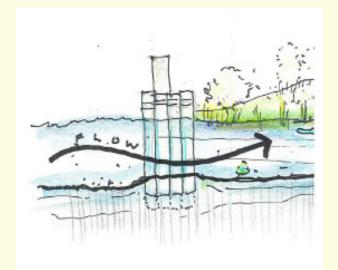
As the harbor's outer breakwater is in need of significant rehabilitation in coming years, Studio Gang proposes the construction of an ecological breakwater of varying widths that absorbs wave energy to protect the outside of Jones Island, provides additional storage space for the confined disposal facility, and creates extensive new wildlife and plant habitat. See page 9 for more drawings and information on the ecological breakwater.

MAXIMIZE INDUSTRIAL EFFICIENCY

Studio Gang encourages the concentration of industrial uses on Jones Island to reduce the footprint of industry in the Harbor District without reducing its capacity. The remainder of the Harbor District benefits as former industrial properties become available for environmental and habitat restoration or other land uses compatible with the future vision for the District.

CONSERVE AND RESTORE

This principle focuses on the restoration of the Harbor District estuary. A drawing on page 7 and additional drawings in the Studio Gang final report show the rivers and lake connected to land-based wetland ecosystems without compromising the existing dockwalls through various perforations and other interventions. The image to the left imagines an end to dredging in the Kinnickinnic River and Inner Harbor, allowing sediments to recreate a marsh.





Illustrations of the rivers and lake connected to land-based wetland ecosystems without compromising the existing dockwalls.

STITCH THE URBAN FABRIC

Investment in connective infrastructure and consideration of new land uses must complement these restorative methods for redevelopment. Bike and pedestrian friendly complete streets connect the Harbor District to surrounding neighborhoods and overcome separations driven by rail and other infrastructure.



SUMMARY OF FINAL REPORT: WENK

The team led by Wenk Architects from Denver organized their concepts for the future of the Harbor District according to short, medium, and long term implementation. The short term considered ideas that could be implemented within 1 to 5 years, the medium term looked at a 10 year vision, and the long term considered ideas to be implemented more than 25 years from now.

SHORT-TERM VISION: 1 TO 5 YEARS

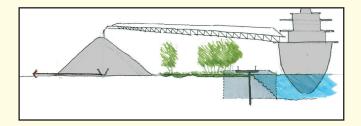
BARGE LANDSCAPES

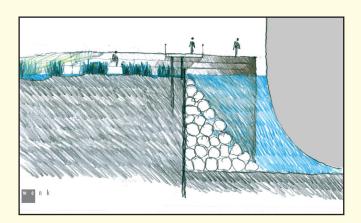
A series of floating barge landscapes could host marsh wetlands mimicking the marshes that once characterized the area and floating recreational platforms that would immediately reposition the image of the Port as a place for water-based recreation and relaxation alongside more traditional port activities. See page 10 for images and information related to the barge landscapes.

REPURPOSING THE WAGON WORKS SITE

Existing sheet pile dock wall could be replaced with sheet pile cells and a boardwalk that allow continued industrial use of the site and recreational access to the harbor edge. The proposed dock wall allows temporary mooring of large vessels in the wintertime and provides the option for offloading bulk commodities, all while providing public access to the water's edge. A drawing of this concept can be found on the top of page 7.

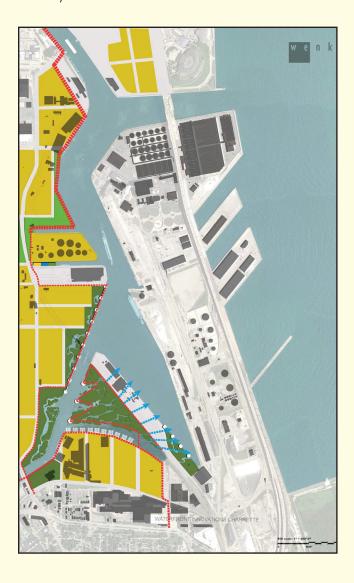




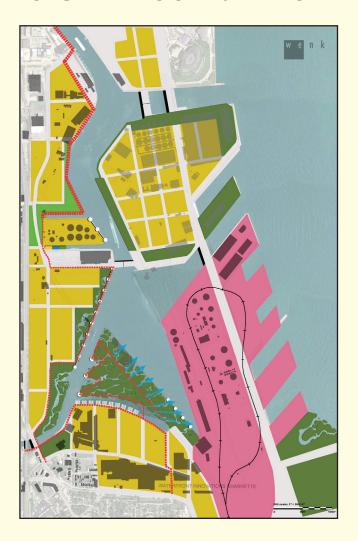


MEDIUM-TERM VISION: 10 YEARS

Following the initial restoration of the Wagon Works site edge, Wenk proposes a broader transformation of the western and southern portions of the inner harbor could ensue over the next decade. Without losing the potential to dock large vessels in the winter, and the opportunity to store bulk materials on selected sites, mixed-use and water oriented development will transform the western and southern portions of the inner harbor, and significant portions of the Kinnickinnic River estuary will be restored.



LONG-TERM VISION: 25+ YEARS





The long-term goal of **Harbor District, Inc.** is to achieve a world-class revitalization of Milwaukee's harbor that sets the standard for how waterfronts work—environmentally, economically, and socially—for the next century.

THE WATERFRONT INNOVATIONS DESIGN CHARRETTE PLANNING COMMITTEE

Dan Adams

Harbor District Inc.

Carolyn Esswein

UW-Milwaukee School of Architecture and Urban Planning

Lilith Fowler

Harbor District Inc.

Janet Grau

City of Milwaukee Department of City Development

Elizabeth Hittman

City of Milwaukee Office of Environmental Sustainability

Stacy Hron

Wisconsin Department of Natural Resources

Samuel Leichtling

City of Milwaukee
Department of City Development

Peter McAvoy

UW-Milwaukee School of Freshwater Sciences

David Misky

Redevelopment Authority of the City of Milwaukee

Ethan Taxman

UW-Milwaukee School of Freshwater Sciences / Harbor District Inc.

James Wasley

UW-Milwaukee School of Architecture and Urban Planning

THANK YOU TO OUR FUNDERS

The Waterfront Innovations Design Charrette was made possible through the support of the US Environmental Protection Agency and the Fund for Lake Michigan. Additional support provided by the City of Milwaukee Office of Environmental Sustainability, Tri City National Bank, Colectivo Coffee, Whole Foods Market, and the UWM School of Freshwater Sciences. Thank you to the members of the Charrette Planning Committee for their many hours spent ensuring the event was a success.



















Harbor District, Inc. 600 E. Greenfield Avenue Room 124 Milwaukee, WI 53204



